Claim Amendments

1. (Currently Amended) An apparatus ~~for transferring data packets~~ comprising:

a first node including a first end of a first channel and a first end of a second channel;

a second node including a second end of a first channel and a second end of a second channel;

a physical connection joining said first node and said second node through which signals of both said first channel and said second channel are carried; and

a first controller connected to said first end of said first channel and a second controller connected to a first end of said second channel, said first controller and said second controller being in communication and controlling interleaving of data from said two channels through said physical connection <u>based on availability of valid data in said two channels to be transferred</u>.

2. (Currently Amended) The apparatus according to claim 1, further comprising a third controller connected to the second end of the first channel and a fourth controller connected to the second end of the second channel, said third and fourth controllers being in communication with each other <u>and obtaining information on whether the second ends of said two channels can accept more data.</u>

3. (Currently Amended) The apparatus according to claim 2, said first controller and said third controller being in communication and said second controller and said fourth controller being in communication, said first and second controllers controlling the interleaving of data further based on said information.

4. (Original) The apparatus according to claim 1, said second node further comprising a queue for receiving data packets from said second end of said first channel and said second end of said second channel and for delivering said packets to a processor bus.

5. (Currently Amended) The apparatus according to claim 4, wherein said processor bus carries ~~data according to a different type of resource sharing paradigm than said physical connection~~ packets and said physical connection carries flits.

6. (Original) The apparatus according to claim 1, wherein said first node and said second node are connected by a second physical connection which carries both a third channel and a fourth channel.

7. (Currently Amended) A method ~~for transferring data~~, comprising:

~~connecting a first node and a second node with a physical connection;~~

~~connecting one end of said physical connection to one end of at least two~~

~~channels and connecting the opposite end of said physical connection to the other~~

~~end of said at least two channels; and~~

determining availability of valid data in each of at least two channels, wherein

said at least two channels share a physical connection to transfer data between a

first node and a second node;

determining backpressure from a receiver of each channel; and

interleaving flits from said at least two channels along the physical connection

based on said availability of valid data and said backpressure.

8. (Original) The method according to claim 7, further comprising reforming

said flits into packets at the other end of said channels.

9. (Original) The method according to claim 8, further comprising storing said

reformed packets in queues for transfer to a processor bus.

10. (Original) The method according to claim 9, wherein said processor bus

transfers data in a different type of resource sharing paradigm than said physical

connection.

11. (Currently Amended) The method according to claim 7, ~~wherein said flits are interleaved when there is no valid data available in one channel, one channel or is receiving backpressure from a receiver~~ further comprising transferring said flits from each channel across the physical connection, in response to determining that valid data is unavailable in the other channel.

12. (Currently Amended) The method according to claim 7, ~~wherein more than two channels are connected to said physical connection~~ further comprising transferring said flits from each channel across the physical connection, in response to determining that the other channel is receiving backpressure from the receiver.

13. (Currently Amended) A system ~~for transferring data packets~~ comprising:

a first node;

a second node;

at least one physical connection connecting said first node to said second

node;

a processor bus connected to said second node;

a first data channel and a second data channel each having a first end in said

first node and a second end in said second node, and both channels being carried

by said physical connection; and

said channels carrying data packets divided into flits, with flits from both

channels being interleaved in said physical connection ~~without bubbles~~ based on

whether flits are available for a transfer.

14. (Currently Amended) The system according to claim 13, wherein ~~said flits~~

~~are reformed into packets in said second node for transfer to said processor bus~~ one

of said first and second data channels transfers flits on the physical connection, in

response to determining that a flit being sent by the other data channel is the end of

a packet.

15. (Currently Amended) The system according to claim ~~14~~ 13, wherein ~~data is transferred from said first node to said second node with one type of resource sharing paradigm and transferred from said second node to said processor bus with a second type of resource sharing paradigm~~ flits are interleaved further based on whether an receiving end of each channel is able to receive more flits.

16. (Currently Amended) The system according to claim 15, wherein ~~said second node includes queues for holding said reformed packets~~ one of said first and second data channels utilizes the physical connection to transfer flits, in response to determining that the receiving end of the other data channel is unable to receive more flits.

17. (Currently Amended) An apparatus ~~for transferring data packets between nodes of a switched fabric architecture~~, comprising:

a first node including a first end of a first channel and a first end of a second channel;

a second node including a second end of a first channel and a second end of a second channel;

a physical connection joining said first node and said second node through which signals of both said first channel and said second channel are carried; and

a first controller connected to said first end of said first channel and a second controller connected to a first end of said second channel, said first controller and said second controller being in communication and controlling interleaving of data from said two channels through said physical connection <u>based on whether the first and the second channels have valid data to be transferred</u>.

18. (Currently Amended) The apparatus according to claim 17, wherein ~~the architecture is an InfiniBand architecture~~ <u>one of said first and second controllers sends data across said physical connection, in response to determining that only the channel connecting to the one controller has valid data</u>.

19. (Currently Amended) The apparatus according to claim 17, wherein ~~the architecture is an NGIO architecture~~ said first and second controllers controlling the interleaving of data further based on whether the first and second channels receives back pressure.

20. (Currently Amended) The apparatus according to claim ~~17~~ 19, wherein ~~the architecture is FIO architecture~~ one of said first and second controllers transfers data across said physical connection, in response to determining that the channel connecting to the other controller receives back pressure.

21. (Currently Amended) A method ~~for transferring data between nodes of a switched fabric architecture~~, comprising:

~~connecting a first node and a second node with a physical connection;~~

~~connecting one end of said physical connection to one end of at least two channels and connecting the opposite end of said physical connection to the other end of said at least two channels; and~~

~~interleaving flits from said two channels along the physical connection~~ determining whether a first controller and a second controller have data to send, wherein the first and second controllers are connected to a channel; and

in response to determining that only the first controller has data to send, sending data via the first controller.

22. (Currently Amended) The method according to claim 21, ~~wherein the architecture is an InfiniBand architecture~~ further comprising:

determining which controller was the last one to send data.

23. (Currently Amended) The method according to claim ~~21~~ 22, ~~wherein the architecture is an NGIO architecture~~ further comprising:

determining the first controller is starting to send a new packet, in response to determining that the first controller was the last one to send data.

24. (Currently Amended) The method according to claim ~~21~~ 23, ~~wherein the architecture is FIO architecture~~ further comprising:

in response to determining that the new packet is absent, sending data via the second controller.

25. (Canceled)

26. (Newly Added) The method according to claim 22, further comprising:

determining whether the second controller is starting to send a new packet, in response to determining that the second controller was the last one to send data.

27. (Newly Added) The method according to claim 26, further comprising:

in response to determining that the second controller is starting to send a new packet, sending data via the second controller.